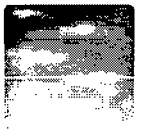

{In Archive} Fw: Message from 45C-3

Catherine Barrett to: wshifrin, htb111 11/07/2011 08:53 AM
Cc: Kelly Schumacher, vanhorn.julie, Bill Pedicino

Archive: This message is being viewed in an archive.

Mr. Shrifrin and Mr. Bussman:

Attached are the comments from Kelly Schumacher, Toxicologist, EPA, ENSV/EAMB on your draft Removal Site Evaluation Report (SRE) for the BLR Redevelopment Corporation portion, Operable Unit 01, of the Ray Avenue Superfund site in St, Louis, Missouri.

Please respond to these comments and submit a final SRE.

Thank you.

Catherine Barrett
Environmental Engineer
EPA Region 7
Superfund Division
MOKS Branch
(913) 551-7704

---- Forwarded by Catherine Barrett/R7/USEPA/US on 11/07/2011 08:38 AM -----

From: EPA SCANNERS@EPA
To: Catherine Barrett/R7/USEPA/US@EPA
Date: 11/07/2011 08:36 AM
Subject: Message from 45C-3

S45C-311110709320.pdf

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

NOV 03 2011

MEMORANDUM

SUBJECT: Draft Removal Site Evaluation Report
BLR Redevelopment Corporation
4327 Gustine Avenue
Ray Ave Superfund Site
St. Louis, Missouri

FROM: Kelly Schumacher
Toxicologist
ENSV/EAMB

TO: Catherine Barrett
Remedial Project Manager
SUPR/MOKS

As requested, we have reviewed the draft Removal Site Evaluation Report, dated July 28, 2011, for the BLR Redevelopment Corporation portion of the Ray Avenue Superfund Site, located in St. Louis, Missouri. We previously provided comments, dated May 18, 2011, on the draft Interim Technical Memorandum, dated April 6, 2011. Since potential risks from Ray Avenue groundwater will be addressed in a Streamlined Risk Evaluation (SRE) performed by another party, it is important that the two SREs reference each other and/or are otherwise linked. If you have any questions or need further assistance, please contact me at x7963.

Comments

1. **Section 1.1 (p. 1).** The last sentence in this section indicates that the purpose of this "risk assessment" is to determine whether or not there is a risk. Please change this sentence to, "The purpose of this streamlined risk evaluation (SRE) is to determine whether or not the concentrations of site-related constituents detected in soil samples obtained from the BLR site pose unacceptable health risks to current or potential future on-site receptors." Note that a "risk assessment" typically refers to a "baseline risk assessment," which is used in the remedial process and has more extensive requirements than a "streamlined risk evaluation," which is used for removal actions. Throughout this document, please refer to it as a "streamlined risk evaluation" or "SRE." Second, there is always some level of risk to human health that is associated with the presence of contaminants, but we use the SRE to determine whether or not these potential risks are unacceptable.

2. **Section 1.2 (p.2).** The section on site background discusses several previous investigations. The St. Louis Health Department found the PAHs in 1985; the EPA detected the PAHs and the PCBs in 1988; confirmation samples were collected around 1991 following removal of underground storage tanks used to store solvent; and more samples were collected near the former USTs in 1993 and

1994. These historical data should be included in the SRE. If available, analytical data reports should be attached as appendices. The main text of the SRE should summarize the concentrations of site-related contaminants detected in these past sampling events, the locations and depths of these samples, and the quality of the historical data (e.g., adequacy of reporting limits). The SRE should also indicate whether or not the historical investigations reflect current conditions. For example, if samples in a previous sampling event were collected from an area that has since been excavated, they would not reflect current conditions. The PCBs were not detected in the 2009 sampling event, but we are unsure whether this is due to remediation. If the historical data reflects current conditions, the COPC concentrations from past sampling events should be compared to samples collected in 2009. If historical data are good quality data, reflect current conditions, and provide supplemental information to the 2009 dataset (e.g., different locations, depths, media, etc.), they should be used when deriving risk estimates in this SRE.

3. **Section 1.3 (p. 3).** This section is the "Scope of the Risk Assessment." Please refer to the document as a "Streamlined Risk Evaluation" or "Risk Evaluation," as previously discussed. At the end of the first sentence in the second paragraph ("A conceptual site model will be developed....and the potential receptors."), please add, "under current and potential future land use scenarios." For the reasons discussed in Comment 1, please change the final sentence in this section to, "...whether or not the site poses an unacceptable risk to human health."

4. **Section 2.1 (p. 4).** The last paragraph on this page indicates that samples were examined for color and/or odor and the PID readings were measured because this is "indicative of the presence of contaminants." Please note that Region 7 does not consider color, odor, or the PID readings definitive indicators of all potential contaminants. These measures provide value, but unlike laboratory results, we cannot rely on them to show that samples are free of contamination because they do not identify specific contaminants and the detection limits are inadequate for risk assessment purposes. We suggest revising this section to make it clear that all samples were analyzed in the laboratory, in addition to being examined for color, odor, and the PID readings.

5. **Section 2.1. (pp. 4-5).** The section describing data collection includes several of the topics expected in a data useability evaluation. In addition, this section should discuss the adequacy of the laboratory reporting limits. Specifically, the reporting limits should be compared to screening levels. Section 2.1 should state that this comparison was done and should list those constituents where the reporting limits were greater than screening levels. A qualitative discussion for those constituents with inadequate reporting limits is helpful. For instance, what concentrations were detected in other samples? What level of risk does the reporting limit represent?

6. **Section 2.2 (pp. 6-7).** This section describes the COPC screening process, and a summary table of the site COPCs is included on page 7.
    a. Please indicate that industrial soil Regional Screening Levels (RSLs) were used (which is appropriate for this site), since residential levels are also available.
    b. Since the RSL tables are updated approximately twice a year, please indicate the date of the table referenced.
    c. While it is acceptable to use the RSLs for screening, site-related constituents should not be screened out. At Ray Ave, this includes the PAHs. Please retain all detected PAHs, as well as nondetected PAHs with reporting limits above the RSLs. Acenaphthene, anthracene, fluoranthene, fluorene, and pyrene should be retained as COPCs for quantitative assessment.

If naphthalene was detected, according to the analytical data reports in Exhibit 1, please retain it as a COPC as well. (Note that since these COPCs were detected at much lower concentrations, the risk estimates for each of them individually will tend to be low, but it is important to retain them when calculating the total risk from the group of PAHs.) In addition, please retain benzo(g,h,i)perylene and phenanthrene, which were detected but do not have screening levels or toxicity values, as COPCs for qualitative assessment in the uncertainties section. For example, BLR might discuss whether benzo(g,h,i)perylene and phenanthrene are commonly found in the same locations and at the same magnitude as other PAHs.

d. Lead was retained as a COPC, with a maximum detected concentration of 95.7 mg/kg. BLR does not have to retain lead as a COPC. Briefly, much is known about the toxicological properties of lead, so we assess risks differently than all other compounds, using a model to predict blood lead levels. The screening level of 800 mg/kg that is available in the RSL tables is not based on a traditional RfD, so we cannot adjust the hazard quotient to 0.1 (giving an RSL of 80 mg/kg) like we do with other compounds. Thus, it is appropriate to compare the maximum detected concentration to 800 mg/kg.
e. The correct RSL for mercury is 4.3 mg/kg, rather than 3.4 mg/kg.

7. **Section 3.1 (pp 8-9) and Section 3.2 (p. 11).** When characterizing the exposure setting, please also discuss site groundwater. We previously commented that assessment of dermal contact or incidental oral exposure by construction workers to groundwater was not required due to the depth of groundwater (greater than 15 ft bgs). This is why it was not encountered while collecting soil samples. However, beneath the clay confining layer, the site groundwater is under pressure. When collecting groundwater samples at other portions of the Ray Avenue Superfund Site, the groundwater rose to the surface when the clay confining layer was disturbed. Thus, there is a potential for direct exposure to groundwater via dermal contact and incidental ingestion by future workers who may install piers or piling to tie to rock during construction. Therefore, please discuss the depth to groundwater at BLR, the clay confining layer, and the potential for groundwater to rise to the surface if this layer is disturbed since this represents a complete exposure pathway. Please also indicate that other portions of the site will assess exposure to groundwater via these pathways, as well as through the drinking water pathway, in a separate SRE.

8. **Section 3.2 (pp. 10-11).** These pages discuss potential complete exposure pathways at the site. The SRE makes the assumption that the site is not paved, so that exposure to commercial/industrial and construction workers is currently a complete pathway. Instead, we recommend examining current and potential future receptors. For example, BLR could indicate that current exposures to commercial/industrial workers are much less (or incomplete) than potential exposures to future commercial/industrial workers. This is assuming the building footprint and pavement currently prevent exposure to the soil, but that this covering could be removed in the future so that future workers could be exposed. For construction workers, the current exposure is incomplete since there is no construction work in progress. However, construction projects could occur in the future, making exposure to future construction workers a complete exposure pathway.

   Please also note that we typically assess exposures to both indoor and outdoor commercial/industrial workers. However, because exposures will be greater for the outdoor worker and the fact that this is a streamlined risk evaluation instead of a baseline risk assessment, it is acceptable to only assess exposure to the outdoor worker. Be sure to discuss that exposures are potentially complete for both

future indoor and outdoor workers. (We note that the exposure factors identified on pages 11 and 12 are for a "hybrid" indoor/outdoor worker. For example, the exposure frequency of 250 days/yr is for an indoor worker, compared to an exposure frequency of 225 days/yr for an outdoor worker, but the soil ingestion rate of 100 mg/day is for an outdoor worker. This is acceptable.)

9. **Section 3.2 (p. 10).** In the last paragraph on this page, "encountered" should be changed to "encounter."

10. **Section 3.2. (p. 11).** The last paragraph in the section indicates that other streamlined risk evaluations will assess exposures to the COPCs in indoor air via vapor intrusion and to those in groundwater via the drinking water pathway by the commercial/industrial worker, as well as exposures to volatiles by construction workers in a trench scenario. Please revise this section to indicate that other evaluations will also assess exposures to the COPCs in groundwater by construction workers via dermal contact and incidental ingestion, as discussed in Comment 7.

11. **Section 3.3 (p. 12).** This section provides the exposure factors for the receptors. Please indicate that the exposure factors used reflect Reasonable Maximum Exposure (RME) scenarios. When using the assumptions provided to check the particulate emission factor (PEF) for the construction worker, we calculated a value of 5.55E+06 m^3/kg, not 1.36E+09 m^3/kg as stated. In the calculations on the second to last page in Exhibit IV, a PEF of 5.57E+06 m^3/kg appears to have been used. Please revise Section 3.3 to include the correct PEF, and ensure that this value is used in the calculations. Also, please define the dispersion correction factor (F_D) of 0.185 on page 12.

12. **Section 4.1 (p. 13).** This section discusses those COPCs that have noncarcinogenic toxicity values, including lead. Please revise this section so that lead is not considered a COPC, as previously discussed in Comment 6.

13. **Section 4.1 (p. 13).** The second paragraph of this section states, "Only limited data exist on the respirator[y] effects of exposure to trivalent chromium." Please revise this statement. Recall that toxicity values for hexavalent chromium should be used, since we do not know the ratio of hexavalent to trivalent chromium present at the site.

14. **Section 4.2 (pp. 13-14).** This section discusses the potential carcinogenicity of the site COPCs. Briefly, toxicity assessment for cancer effects has two components. The first is a qualitative evaluation of the weight of evidence that the chemical does or does not cause cancer in humans (e.g., arsenic is classified, "A (Human Carcinogen)." For chemicals that may cause cancer in humans, the second part of the toxicity assessment is to describe the carcinogenic potency of the chemical. This is done by quantifying how the number of cancers observed in exposed animals or humans increases as the dose increases (i.e., dose-response). It is typically assumed that the dose-response curve for cancer has no threshold, arising from the origin and increasing linearly until high doses are reached. Thus, the most convenient descriptor of cancer potency is the slope of the dose-response curve at low doses (where the slope is linear). This is referred to as the cancer slope factor or inhalation unit risk, depending upon the route of exposure. For each of the COPCs with cancer toxicity values please indicate their cancer weight of evidence descriptor and the basis for this decision. A table may be used.

15. **Table 7.** This table provides chronic cancer and noncancer toxicity values for site COPCs.
    a. Although the values are provided in the RSL tables, their actual sources are IRIS, CalEPA, New Jersey Department of Environmental Quality, etc. Please provide these references; footnotes may be used.
    b. Chronic toxicity values are used when assessing risks to commercial/industrial workers. On the other hand, construction workers are expected to have shorter durations of exposure. For this scenario, it is appropriate to use subchronic toxicity values to assess noncancer health risks. We previously provided guidance on subchronic toxicity values in Comment 11 of our comments on the interim technical memo. We stated, "For chromium, please use a subchronic oral RfD of 0.005 mg/kg-day and a subchronic inhalation RfC of 0.0003 mg/m^3, both of which are based on the ATSDRs intermediate MRLs." We also stated that subchronic toxicity values were not available for the other COPCs. However, the chronic noncancer toxicity values for arsenic should be used to assess potential risks to construction workers, and potential uncertainties associated with the lack of subchronic noncancer toxicity values should be discussed.
    c. The correct abbreviation for the relative absorption factor for oral absorption is ABS_{GI}, not RfD_o. When this factor equals something other than one, it is used to adjust oral toxicity values to dermal toxicity values. At this site, this applies only to chromium(VI); see below.
    d. The correct abbreviation for the relative absorption factor for dermal absorption is ABS_D, not RfD_d. It appears that this factor was used correctly when calculating dermal exposure, according to the sample calculations in Exhibits III and IV.
    e. For chromium(VI), ABS_{GI} should be changed to 0.025, and ABS_d should be 1. Since the ABS_{GI} is 0.025, the correct dermal slope factor is 20 $(mg/kg\text{-}day)^{-1}$, and the correct dermal chronic reference dose is 7.5E-05 mg/kg-day.

16. **Section 5.1 (pp. 14-16).** This section is the risk characterization for "Current Land-Use Conditions." As previously discussed in Comment 8, exposure under current conditions is likely minimal since most of the site is paved. However, in the future, the pavement may be removed so industrial/commercial workers are exposed to the surface soil. We suggest that Section 5.0 be divided according to receptor: future commercial/industrial worker and future construction worker.

17. **Section 5.1 (p. 15).** The risk characterization section describes how the maximum concentration detected was used to calculate risks from each COPC, since the dataset is limited. For some of the COPCs (e.g., benzo(k)fluoranthene, chrysene, and dibenz(a,h)anthracene), the reporting limits for some samples were higher than the highest concentration actually detected. Further, page 15 indicates that one-half of the highest reporting limit was selected as the concentration to calculate risks to commercial/industrial workers from exposure to indeno(1,2,3-cd)pyrene, since it was only detected in subsurface soil, not surface soil.

    At this site, very limited data is available. Five surface soil samples were collected. As an example, the level of indeno(1,2,3-cd)pyrene detected in each sample was 5.3J, <181, <2.1, <222, and <0.454 mg/kg. In the subsurface soil samples collected from each of these same five locations, indeno(1,2,3-cd)pyrene was not detected in four samples (<0.431 to <2.28 mg/kg), was J-coded in five samples (0.16J to 470J mg/kg), and was detected in one sample (635 mg/kg).

    Due to the very limited data, the high concentrations detected in some of the samples, and the range of concentrations detected at a single location across various depths, please use the maximum

reporting limit (if it is higher than the actual highest concentration detected or if the compound was not detected) from the surface soil samples to calculate risks to commercial/industrial workers so that it is less likely that potential risks are underestimated.

18. **Section 5.1 (p. 15).** An equation is provided on page 15 to calculate the exposure concentration of each COPC. However, this equation accounts only for incidental ingestion of soil. Please provide additional equations to account for dermal exposure and inhalation of particulates. It appears that these equations are provided in Exhibit III, but the generic equations (i.e., without the numbers) should be included in the main text of the SRE.

19. **Section 5.1 (pp. 15-16).** The risk characterization indicates that, "The IELCR for each chemical and pathway was compared to 1E-05 to determine whether or not the presence of each chemical, for each pathway, poses a risk to human health." Page 16 refers to the "U.S. EPA concern risk range of 10^{-4} to 10^{-7}. In the risk characterization, objective risk estimates should be presented. This can be achieved by directing the reader to Table 8, which provides quantitative estimates of cancer and noncancer risks for each COPC and for each pathway. BLR may include a conclusion section that summarizes site-wide risk estimates and identifies key drivers or pathways of concern. However, the SRE is meant to be an objective document that can be used by risk managers in making decisions; it should not determine whether risks are acceptable or not. (Note that the presence of the COPCs always presents risks, but these risks may or may not be acceptable.) As a final note, the EPA's target cancer risk range, as stated in the National Contingency Plan (NCP) is 10^{-4} to 10^{-6}. Please make sure the correct range is provided.

20. **Section 5.1 (p. 16).** The last paragraph on page 16 discusses noncancer risks. Please replace the term "site wide hazard quotient" with "hazard index", which is the sum of the individual noncancer hazard quotients.

21. **Section 5.2 (pp. 17-18).** This section is the risk characterization section for construction workers. Please revise Section 5.2 to reflect the changes requested for Section 5.1 in Comments 18, 19, and 20.

22. **Tables 8 and 9.** These summary tables provide risk estimates for commercial and construction workers, respectively. Once the comments in this memo have been incorporated, the numbers in these tables should slightly change. We will examine the revised tables when the final SRE is submitted. However, based on Exhibits III and IV, it appears that the risk estimates were calculated using the correct equations. Please be sure that the subchronic toxicity value is used to calculate risks to the construction worker for chromium.